

```

*****
*
*          QQQQQQQQ      ZZZZZZZZZ      XX      XX
*          QQQQQQQQQQ    ZZZZZZZZZ      XX      XX
*          QQ      QQ      ZZ      XX XX
*          QQ      QQ      ZZ      XXX
*          QQ      QQ      ZZ      XXX
*          QQ      QQ QQ    ZZ      XX XX
*          QQQQQQQQQQ    ZZZZZZZZZ      XX      XX
*          QQQQQQQQ      ZZZZZZZZZ      XX      XX
*
*          QQ
*
*****

```

The Journal Covering Amateur Radio & Sinclair Computers  
 ZX-80; Micro-Ace; ZX81; T/S 1000, 1500, & 2068; QL  
 Alex. F. Burr, K5XY, Publisher  
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 88001

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March 1988

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PUBLISHER'S NOTES  
K5XY

Well as some of you noticed from the cover of last month's QZX, I have been able to redesign the cover of QZX to indicate the departure of W4GHV and yet keep the same depth and symmetry which he used. Fortunately the overall look remains unchanged.

The printer did get the February issue out in time. Some of you will even have gotten it in February. Everybody should get this March issue in March.

WA6DLI called my attention to some useful articles in other magazines. The Timex T/S 1000 NU4V RTTY circuits and program details were in the April 1985 issue of Ham Radio. A Commodore version of a satellite tracker is in the December 1987 issue. The only difference for the ZX 81 or T/S 1000 and T/S 2068 would be in the edge connector paths to the data and bus lines. The March issue of Computer Shopper carries an article on RAM expansion for the Sinclair computers. The March issue of CTM also has a good Sinclair article. We may try to reprint some of these sometime.

When looking over old QZX issues getting ready to take the index book material to the printers, I noticed an old ad for the internal RAM which was given away by WA5DUC. The price tag on that little circuit board was over \$100.00. My how prices for memory have gone down. I do note, however, a recent article in the last issue of Computer & Software News that the price of 256K DRAMS has tripled in recent weeks. This price increase will affect the price of some RAM extension boards for the QL. The reason given was reduced supplies from Japan, the biggest supplier of large RAM chips, and greater profit margins tacked on by distributors.

I have received indications from several sources that Quantum Computing is going out of business. I have personally written several letters and made phone calls which have not been answered. I am sorry to see these indications that the company may be having difficulties. The company has been a long time advertiser in QZX and it helped introduce me to the QL. The people with whom I dealt were always very enthusiastic about the potential that the QL represents. You will notice that their ad is still running in this issue. The reason that it is still running is that the company has already paid for this and several future ads, so I cannot arbitrarily go counter to the instructions which the company gave QZX when there was last any communication from them. However, I suggest that, before sending them any money, you make sure that you have a reasonable chance of receiving whatever it is you wish.

Speaking of advertisers, I recently received a note from Ed Grey of Grey & Clifford Computer Products. That company is now just Ed Grey Enterprises. The good news is that their Z-SI/O RS-232c Serial Interface Card, which is the basis for getting the T/S 2068 on packet (see QZX for September 1987), is now available as a bare printed circuit board at a greatly reduced price. While supplies last, he will throw in a T/S 2050 modem card which has some of the hard to get parts. For address, see ads in past QZX issues. (also Equip column.) He also is running a BBS for customer support at (213) 971-6260 which is available 24 hours a day on 300/1200 baud. (8 bits, 1 stop, no parity.)

**WRONG!** is the short of TS2050 Modem, upgraded for RTTY and CAT with RS232 I/O port, for the TS1000 computer.

If you have a Timex Sinclair 2050 Modem card,<sup>(1)</sup> with just a few dollars for parts and some of patience, you can make a serial interface (in RS232 convention) without loss of Modem (Bell 103) capability, switching between them with an electronic switch (Fig 7 ).

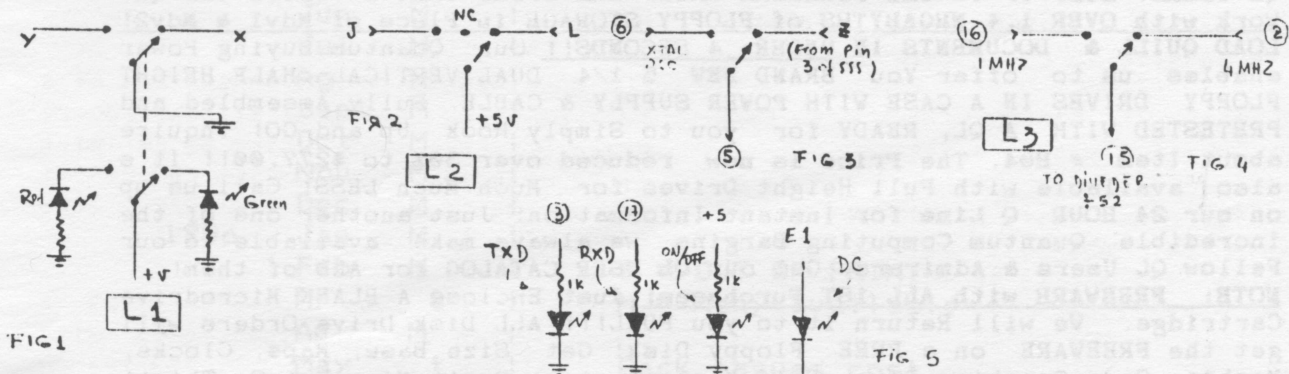
This project is oriented to TS1000 users, but is full compatible for use of TS2050 with TS2068 if you have appropriate software.

I have included two ways for multiple baud rates. Now, this card can be used for ASCII as well as BAUDOT with several combinations of data clock rates.

a) I have set into PC board a data clock using a 555 timer IC. The clock rates should be adjusted a 16 times the data rate. With a switch SPDT (L2) (center off) you can obtain three frequencies different. Putting L2 (see Fig 9 ) in center position (NC) you will adjust pot (multiturns) of 10K $\Omega$  (H-G) until you can read<sup>(2)</sup> at pin 3 of 555 a frequency of 800Hz for 50b/s or 720Hz for 45 bauds. With switch L2 in upper position (J), adjust pot (J-K) of 10K $\Omega$  to 1180 Hz (for 74 baud) and with L2 in the lower position (L) you will adjust pot 50K $\Omega$  (L-M) to 1760Hz (110 baud). You will change this baud rates at you elections!

b) Likewise, I have put another switch (L3) that switching cristal clock rate (between 4MHz and 1 MHz) into IC MC14569 configured in TS2050 as a 52x divider. In this manner with swich set a 4 MHz (see Fig4 ) in the output of MC14569 <sup>(6)</sup> you will have 76923Hz and divided under software control by 16 you obtain 4800 baud....just for CAT!.. Now, if you divide by 64 (setting B2 and B1 to 1 in word control of 8251 USART <sup>(3)</sup>), you will obtain 1200 baud.

Summarily, with the components values and configuration proposed, you obtain: 45 or 50, 74, 110, 300, 1200, 4800, 19200 and 76923 baud (five last with stability and accuracy of cristal clock).



Enclosed is PC board layouts and parts-placement guide.

You will solder point to point isolated wires between points signed with a number into a circle (Fig6,7,10 ). Previously you will cut copper traces in points indicates as (x) in Fig 6 .

You can choose the cabinets (preferably metal box) and inside localization of new PCB.

I have put the 2050 card into a metal case, previously removed all connectors (J1 to J3) and setting my additional PC above of 2050 card with insulated spacers just over J1 position.

In frontal side of case I have set 4 switches and 6 LEDs (see Fig 1 to Fig 5). Likewise, I have made an onboard power supply of 9V DC, with another switch (on/off) in back side of case for AC.

#### SOFTWARE

All programs for TS2050 obviously works OK, and all programs of previous articles in QZX for use with serial interface based in 8251 USART (RTTY, CAT, etc.) work fine with this modification, only you must change address ports 59 by 119 and 51 by 115.

ENDING I believe that figures and circuits are sufficiently explicatives and obviously wich should need no more comment.

73, LU8MAD Guillermo, 1988

#### NOTES:

- 1 - 2050 cards available from Grey & Clifford, see Ad in QZX
- 2 - You can use "Audio Frequency Counter Program", by Charles Milazzo KP4MD, in QZX October 1984.
- 3 - See QZX April 1986 pag 2,3,4 & 10.

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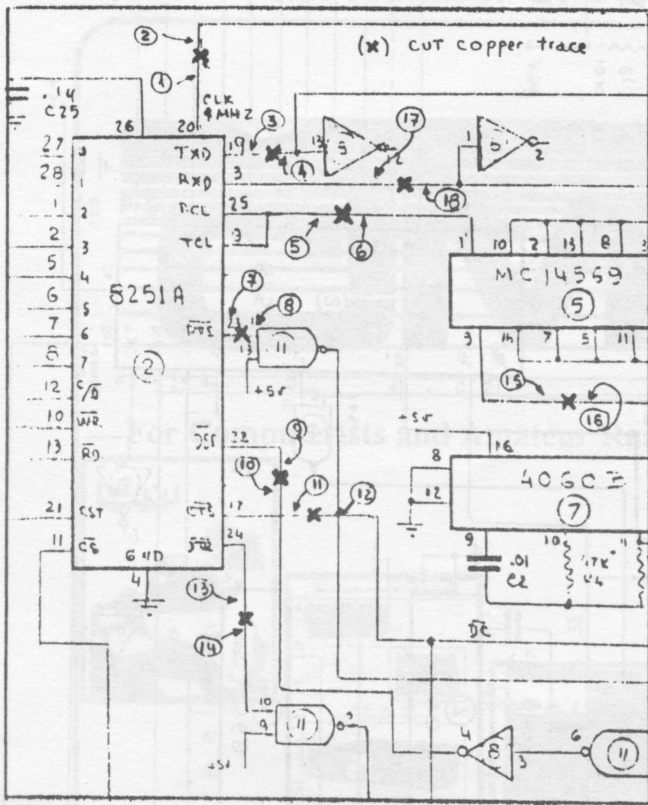


FIG 6

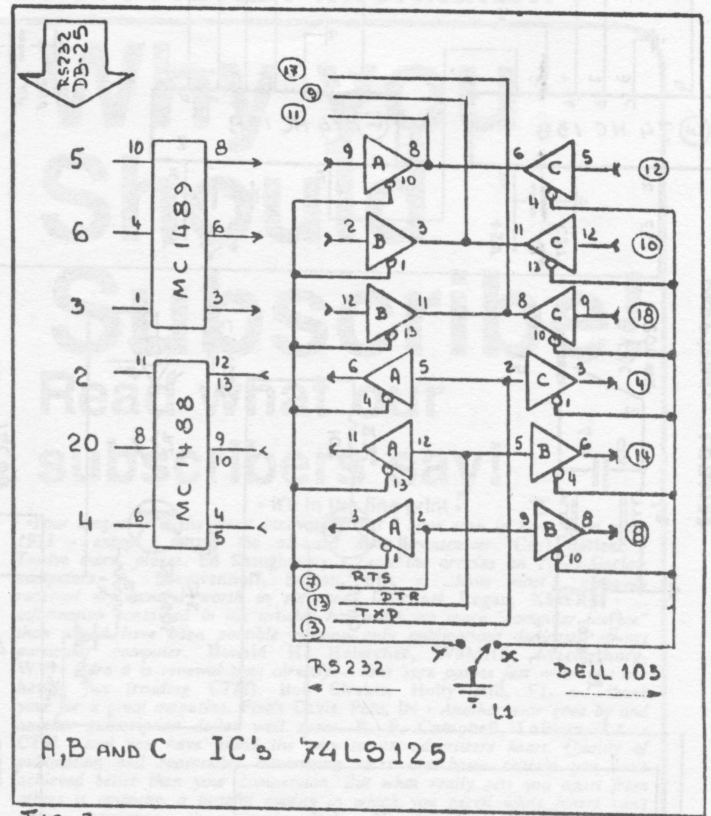


FIG 7

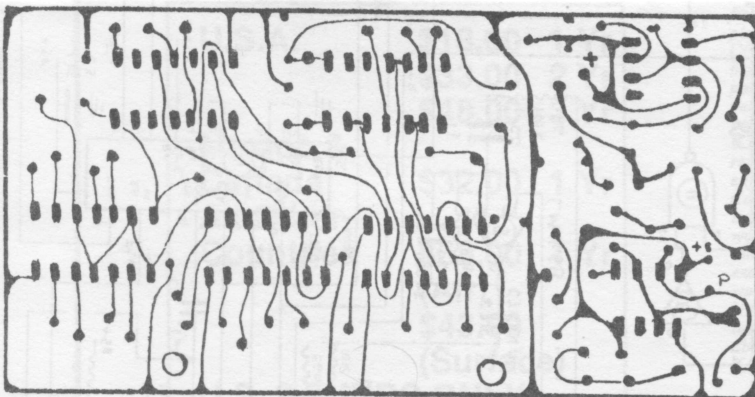


FIG 8

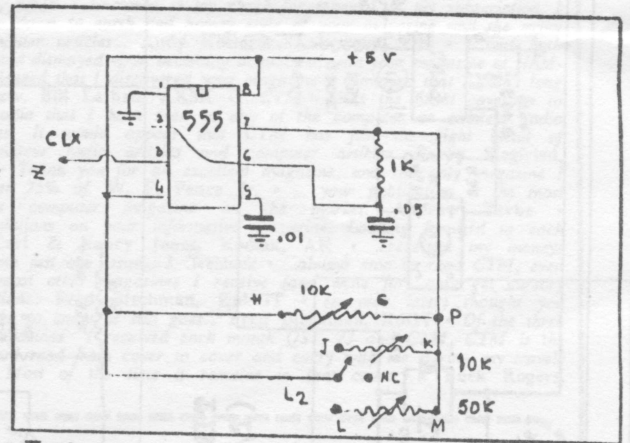


FIG 9

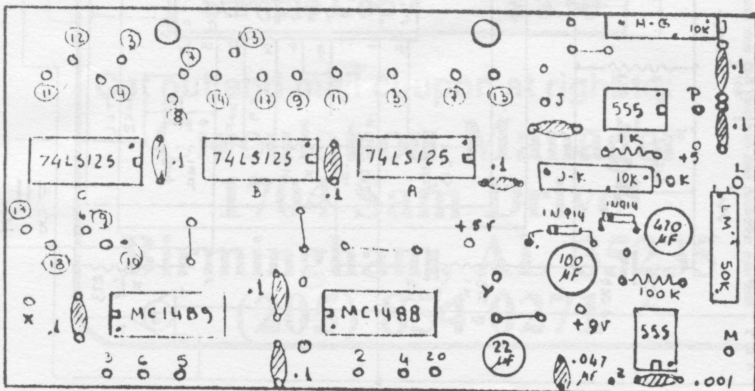


FIG 10

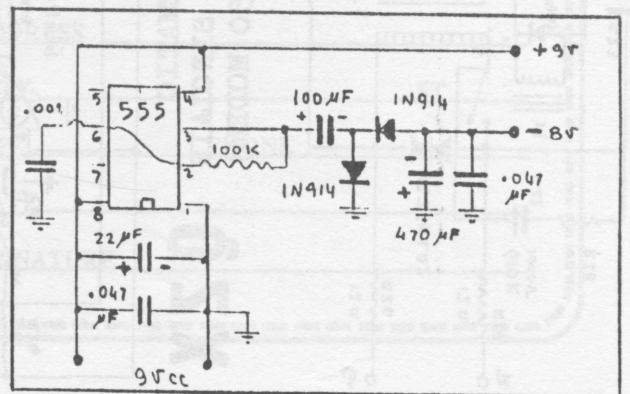
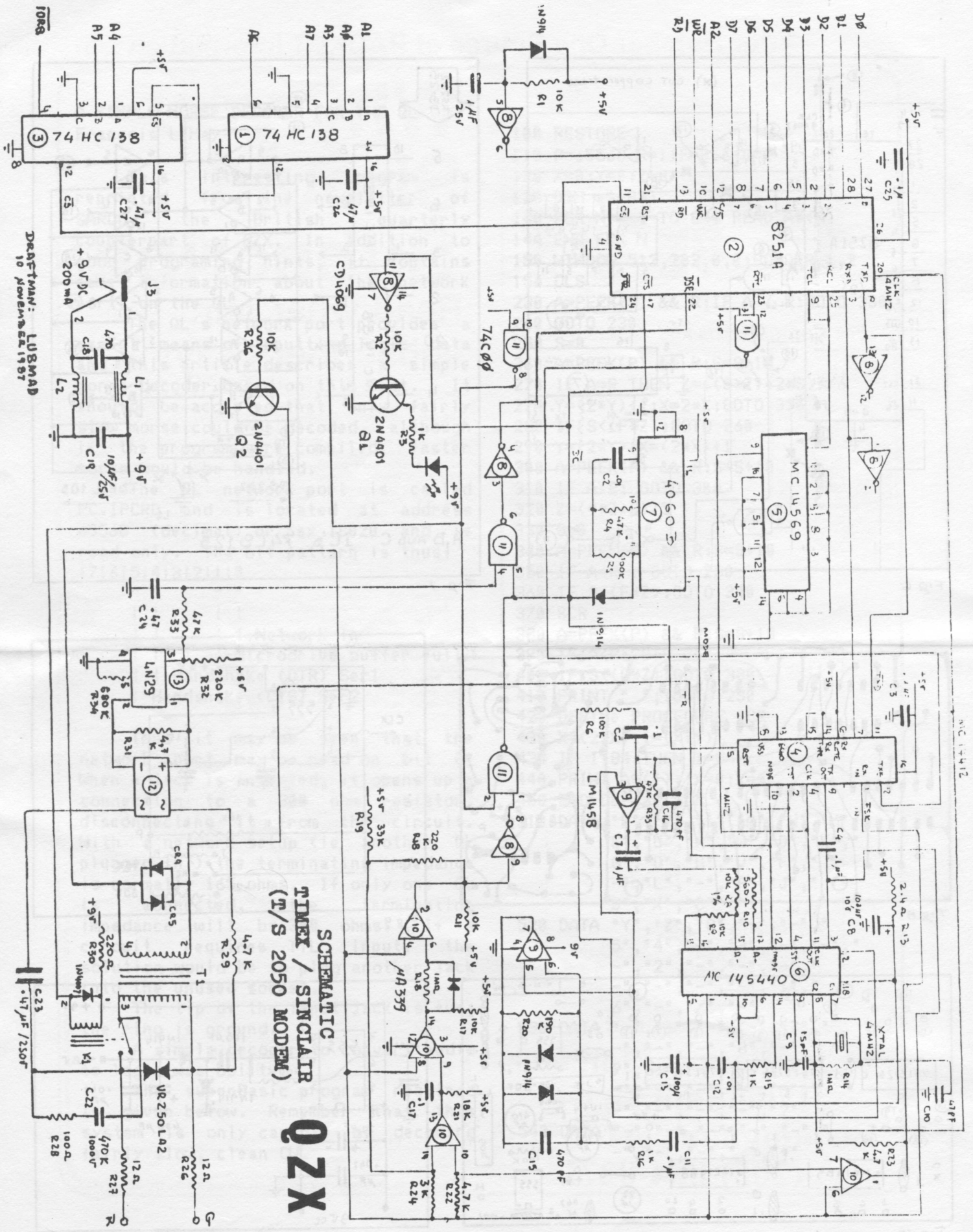


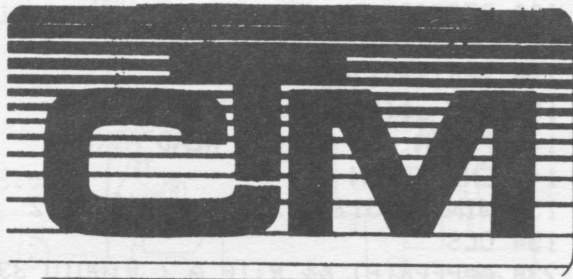
FIG 11



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A SIMPLE MORSE DECODER FOR THE QL  
 Francois LeMay

This interesting program is reprinted from the newsletter of SARUG, the British quarterly counterpart of QZX. In addition to good programing hints, it contains some information about the network ports on the QL.

The QL's network port provides a useful means of inputting logic data and this article describes a simple morse decoder based on this fact. It should be accepted that only fairly slow morse could be decoded, although if the program were compiled, faster morse would be handled.

The QL network port is called PC.IPCRD and is located at address 65568 (decimal) or hex 18020 and is read only. The bit pattern is thus:  
 17!6!5!4!3!2!1!0

```

  ^ ^      ^ ^
  | |      | |
  | |      | | -Network-in
  | |      | | -Microdrive buffer full
  | |      | | -Handshake (DTR) Ser1
  | |      | | -Handshake (CTS) Ser2
  
```

Thus it may be seen that the network port may be read on bit 0. When a jack is inserted, it opens up a connection to a 300 ohm resistor, disconnecting it from the circuit. With a network setup (ie another QL plugged in) the terminating impedance is normally 165 ohms. If only one QL is connected, the terminating impedance will be 300 ohms. If a circuit requires TTL input, the solution would be to plug another jack into the unused socket.

The tip of the input jack is +ve; the ring is ground.

A simple decoder to convert audio to logic was built.

The superBasic program required is given below. Remember that this system is only capable of decoding fairly slow, clean CW.

```

100 RESTORE
110 P=65568;R=1:F=0.6:G=2
120 X=0:Y=0:Z=0
130 DIM a$(85)
140 FOR N = 1 TO 84: READ A$(N)
144 END FOR N
150 WINDOW 512,202,0,0:BORDER 1,2
154 CLS
230 A=PEEK(P) && R:IF A < R:GOTO 330
240 GOTO 230
250 S=0
260 A=PEEK(P) && R:S=S+10
270 IF A=R THEN Z=((5*Z)+2*S))/6
274 Y=(2*Y)+1:X=2*X:GOTO 330
280 IF S<(F*Z):GOTO 260
290 Y=(2*Y):X=(2*X)+1
300 A=PEEK(P) && R:S=S+10
310 IF A<R: GOTO 300
320 Z=(4*Z+S)/5
330 S=0
340 A=PEEK(P) && R:S=S+10
350 IF A<R : GOTO 250
360 IF S<(F*Z):GOTO 340
370 SCR
380 A=PEEK(P) && R:S=S+10
390 IF A<R:GOTO 250
400 IF S<(G*Z):GOTO 380
410 PRINT " ";:GOTO 230
420 DEFine PROCEDURE SCR
430 X=(2*X):I=(X+Y)
434 IF I>84 THEN I=84
440 PRINT A$(I);:X=0:Y=0
450 END DEFine SCR
510 DATA "E","T","I","A","N","M","
S","U","R","W","D","K","
G","O","H","V","F","
-","L","-","P","J","
B","X","C"
520 DATA "Y","Z","Q","-","-","
5","4","-","3","-","-","
-","2","-","-","-","1","
6","-","/","-","
530 DATA "-","-","-","-","7","
-","-","-","-","8","
9","0","-","-","-","
-","-","-","-","?"
540 DATA "-","-","-","-","-","
-","-","-","-","-","
  
```



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\*\*\*\*\*

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	Nov	0	Dec	M	
	Dec	0	1988	Jan	M
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	Jun	0	Jul		
	Jul	0	Ag		
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	Dec	8			
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## BITS AND BYTES

115 Here is a note about the Z80 CPU used in the T/S 1000. The original Z80 had 8 pull-up resistors, R38 - R42 going to pins 7,8,9,10,12,13,14,15. All were 10K. Someone thought it needed them. But the Z80A and Z80B do not and they can cause trouble. The suggestion is to get rid of them. The Zilog manual makes no mention of any being required.

116 A tip from G4NWB through SARUG in Great Britain was written for the Spectrum but will probably apply to the T/S 2068 too. While transmitting RRTY on a TS430 it was noticed that the mic gain control was getting very hot. It turned out that there is an intergrated mic amplifier immediately after the gain control and it was getting cooked. The problem was solved by inserting a 2.7 K ohm resistor in the live side of the input lead from the Spectrum and 50 ohms in the ground connection. That is, both resistors in the lead from the Spectrum mic socket to the mic input plug on the rig. The output from the Spectrum can peak to 3 volts although the rig is only expecting a few millivolts at the microphone input. Other rigs may have similar circuitry so it might be well for users to look at their circuit diagram before transmitting. These remarks probably apply equally to CW or SSTV too.

117 A bug in the ROM of the T/S 2068 causes the INTEGER function for (-65536) to give the incorrect result of -1. For other cases where the result should be -65536, it gives -1E-38. Because the bug is in the ROM, there is no correction.

118 Monitor tips for the QL. The NEC Multisync works well and has magnificent color (also very expensive). The MGA Mitsubishi TV/RGB monitor works without any sync problems. It does have overscan on the F! mode but works ok on the F2 (TV) mode.

119 The break key on the T/S 2068 does not always work when a program goofs up. Sometimes, if you put any audio into the casset port and then hit the break key, the K cursor will appear.

## UNCLASSIFIED ADS

WANTED: UNCLASSIFIED ADS for publication in QZX. Cost is 1 cent for each keystroke (characters, blanks, etc.). Payment must be included with order. This is an excellent way to sell your program or unwanted equipment, ask for help, or find a specific program. Send your ad with payment to QZX, 2025 O'Donnell, Las Cruces, NM 88001.

FOR SALE: I have tapes of the original Field Day Log and Dupe (TSFD1.9) available as well as some other programs that I wrote, including Maximum Usable Frequency (TSMUF-5), Moontracking (MOON-1.4 for you astronomers and EME communications), and a simple Text Processor (WORD9.5). They are only for the ZX81/TS1000 with 16K RAM, TS1500, and the TS2040 printer. The last 3 are also programed for the CAI/P40 printer. Please specify which programs you want, and send \$5.00 for each, or \$15.00 for all 4 to: Bob O'Leary, KQ2F, 21 Kate Terrace, Piscataway, NJ 08854.

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WANTED: T/S 2068 computer w/ps & manual plus anything that goes with it. Hal Schweikart WB3JDP, 753 Yeadon Ave., Yeadon, PA 19050

FOR SALE: Book Learning Timex/Sinclair Basic by D. A. Lien. Paperback 330 pages. Originally \$14.95 now \$7.00 postpaid in US. Alex. F. Burr, K5XY, 2025 O'Donnell, Las Cruces, NM 88001.

FOR SALE: Book Inside CP/M Plus by D. E. Cortesi. Paperback 260 pages. Originally \$18.45 now \$9.00 postpaid in US. Very good for QL users with CP/M. Alex. F. Burr, K5XY, 2025 O'Donnell, Las Cruces, NM 88001.

FIELD DAY LOG COMMENTS  
K7FG

K7FG writes that he agrees with all the comments that K2QF wrote in his very fine article in the February issue about his field day log program comments except for the item about scratching line 4412. He would rather change line 160 to DIM T\*(7) so that one could correct a long entry error.

In the comments which K7FG made in the December issue, line 4444 should show 33 in place of ##. Also the name FD1 6/87 would be for the first program save of the contest.

QZX FRIENDS

WB9KNF -- Jim writes to say that he got his T/S 2068 on packet with no problems now.

WA6DLI -- Bob expanded the RAM on his QL and got some more software.

W1CAS -- Clem renewed and sent some extra money for the postage fund.

W4AT -- Charles is a new subscriber and also requested 30 back issues to catch up.



OH HARRY -- THE GENTLEMEN FROM THE ANTENNA ORDINANCE ENFORCEMENT COMMITTEE ARE HERE TO NEGOTIATE!

73, K5XY

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